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INFORMATION CIRCULAR

A DEVICE FOR SAMPLING MATERIAL CARRIED
BY SILT-BEARING STREAMS



BY

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A DEVICE FOR SAMPLING MATERIAL CARRIED BY SILT-BEARING STREAMS^{1/}

By Harry F. Weaver^{2/}

Rivers in industrial and mining areas frequently are contaminated by material dumped into them, causing the water to carry in suspension large amounts of silt, which subsequently is deposited along the banks and ultimately on the agricultural lands if the water is used for irrigation purposes. Two common examples of this practice are the dumping of breaker refuse in the anthracite region of Pennsylvania and the dumping of tailings from the metallurgical mills in various metal-mining districts.

Studies in stream pollution and its resultant problems are very important, and surveys are constantly being made by Federal and State agencies, as well as by private companies, to determine the quantity of solids actually being carried by these watercourses. These studies require accurate sampling of the silt-carrying water to determine the amount of solids within reasonable limits.

A device that will obtain reasonably accurate samples of material from silt-bearing streams is described in this circular.

CONSTRUCTION

Two concentric metal tubes about 3 inches in diameter are fitted snugly together, with the inside tube free to turn around completely. The end of the outer tube is entirely covered by welding a small piece of metal over the bottom or by welding a larger piece of metal that can be used as a footpiece or anchor. A slot about 1.5 inches wide is cut in both tubes, extending from the base of each tube to within 1 inch of the top of the outer tube. The bottom of the inner tube should be fitted inside with narrow, intersecting crossbars to make the tube rigid. The top of the inner tube is fitted with a small handle to turn the

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tube in the desired position. The length of the device will vary, depending on the depth of the water in the stream, but ordinarily 3 to 6 feet in length is adequate.

OPERATION

The inner metal tube is coated with grease to prevent water leakage. The handle of this tube is turned until the slots are in the "open" position. The device is placed upright on the bottom of the stream to be tested, and the silt-bearing water is allowed to flow through the slot in the tubes for a few seconds. The handle of the inner tube is then turned to the "closed" position, and the trapped material is removed from the device by inverting it and collecting the water in suitable containers.

Sampling stations should be established at regular intervals across the width of the stream being tested, and a sample should be taken from each station at frequent intervals, particularly during the period when the material is being dumped into the stream, to obtain a representative sample. This will be what is commonly termed a "grab" sample, but continuous sampling is not practical.

This device is believed to be the best yet devised for sampling silt-bearing streams.

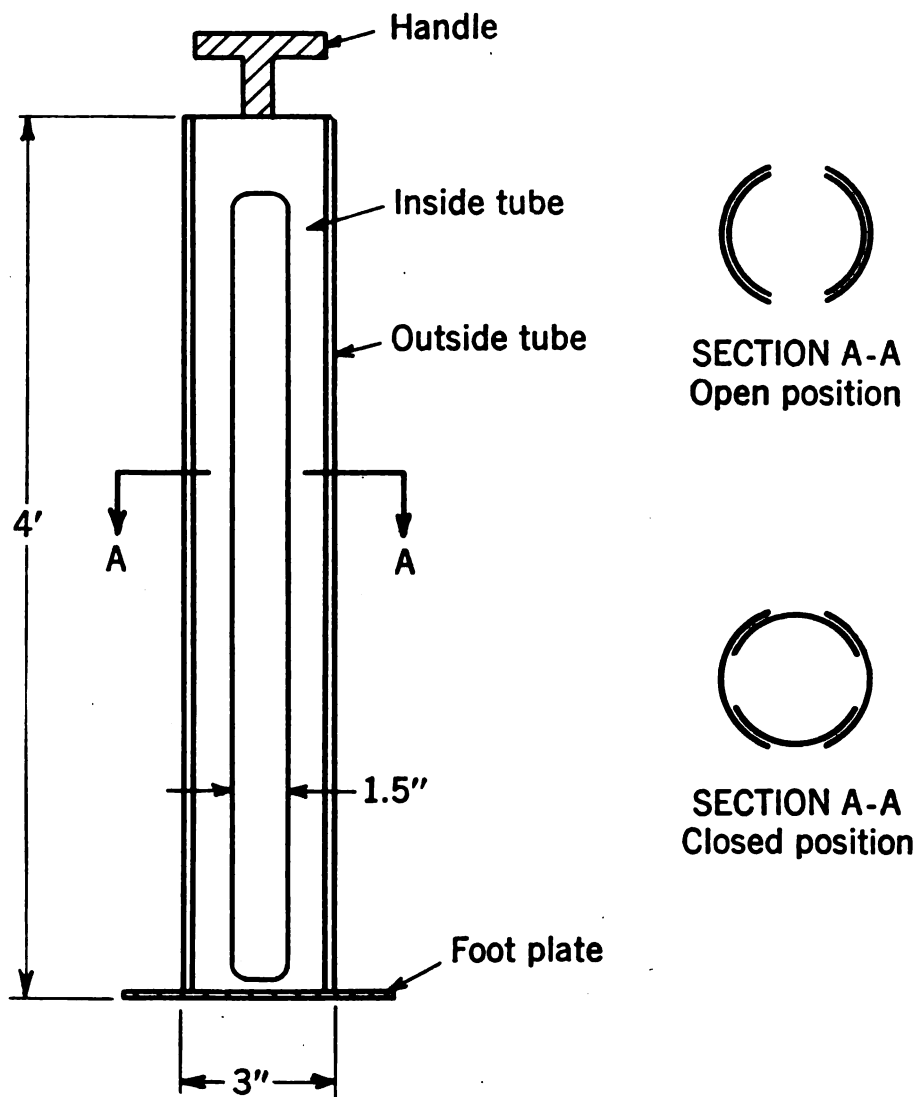


Figure 1.—Stream-sampling device.